

Relationships between pain severity and sleep quality in people with neck pain

Neck pain severity and sleep quality

Özkan Yükselmiş
Department of Physical Medicine and Rehabilitation, Diyarbakır Dağkapı State Hospital, Diyarbakır, Turkey

Abstract

Aim: Studies have shown that individuals with neck pain experience a severe deterioration in sleep quality, individuals with low sleep quality receive less benefit when they receive neck pain treatment, and decrease in sleep quality increases the symptoms of depression in individuals with severe neck pain.

In the literature, studies on pain and sleep quality in individuals with neck pain have been conducted. However, studies that include all of these factors and determine the relationship between each other are not included. In this context, the aim of our study was to determine the relationship between pain severity and sleep quality in individuals with neck pain.

Material and Methods The study included 89 volunteers aged 18-65 years with complaints of neck pain with a score of 4 and above according to the Neck Disability Index (BDI). The pain intensity of the individuals participating in the study was evaluated with the Visual Analog Scale (VAS), their sleep quality was evaluated with the Pittsburg Sleep Quality Index (PUKI), and their personal information was evaluated with the Personal Information Form.

Results: In our study, it was observed that there was a moderate positive relationship between PUKI and BDI. In our study, a moderate positive correlation was determined between the increase in pain intensity and the deterioration in sleep quality.

Discussion: It was determined that impaired sleep quality could lead to neck disability.

Keywords

Neck Pain, Sleep Quality, Pain Severity

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Corresponding Author: Özkan Yükselmiş, Dr. Şeref İnalöz Sokak, 21100, Yenişehir, Diyarbakır.

E-mail: ozkanyukselmis@gmail.com P: +90 0531 525 39 66

Corresponding Author ORCID ID: <https://orcid.org/0000-0002-1996-7030>

Introduction

Neck pain is an important health problem that is common in the world. Neck pain causes a decrease in the quality of life and limitation of daily living activities due to the difficulties it creates in physical functions. Neck pain, which has become one of the most important problems of modern society, affects approximately two-thirds of the adult population at some point in their lives. Non-specific neck pain may improve over time. However, 10% may recur or continue [1].

Neck pain restricts people's activities of daily living, the quality of life and leads to loss of workforce. People often complain of headaches, limitations and pain during neck joint movements, upper extremity pain and difficulties in upper extremity movements [2]. Studies have shown that individuals experiencing neck pain are psychologically negatively affected [1]. Another factor associated with neck pain was reported as sleep in studies. Sleep has been emphasized as both a cause and a consequence of pain. This bidirectional relationship between sleep and pain has important implications for the clinical management of individuals with neck pain [3-4]. It has been determined that the decrease in sleep quality is seen at high rates in individuals with neck pain, individuals with low sleep quality gain less benefit if they receive treatment for neck pain, and decreased sleep quality increases the symptoms of depression in individuals with severe neck pain, and sleep problems are a risk factor for neck pain [5].

The presence of thoracic kyphosis was found in studies conducted on individuals with neck pain. In addition to the cervical region, it was determined that there is a relationship between the angles of the thoracic region and neck pain, and it was determined that the increase in thoracic kyphosis was associated with the severity of neck pain and impaired functionality of the neck region. It has been shown that the increase in thoracic kyphosis negatively affects cervical mobility. It has been stated that there is a relationship between thoracic kyphosis and postural changes in the cervical spine, and that thoracic posture should be evaluated in individuals with mechanical neck pain [6].

Sleep is a vital state of consciousness in which the interaction of the person with the environment is interrupted and may end with physical or sensory stimuli. Each individual's circadian rhythm may be different, which is also called the biological clock. Sleep in the hierarchy of basic needs may differ for each person. However, sleeping less than seven hours continuously can cause some diseases, as well as an increase in pain sensation and concentration impairment [7].

In people with chronic pain, complaints such as difficulty in initiating and maintaining sleep, difficulty waking up in the morning, daytime sleepiness, snoring and nightmares are seen. Inadequacies in sleep quality due to chronic pain lead to adverse conditions that affect quality of life such as limitation of activity and functional disability. Up to 50 percent of people diagnosed with insomnia have had chronic pain. At the same time, people with insomnia have a high risk of chronic pain [8]. Human and animal studies have shown that insufficient or interrupted sleep reduces pain-blocking mechanisms. Moreover, restoring good sleep increases the likelihood that persistent pain will pass over time [9].

It is stated that the decrease in sleep quality has a high prevalence in individuals with neck pain. At the same time, it has been stated that individuals with low sleep quality gain less benefit if they receive treatment for neck pain. In addition, decreased sleep quality has been shown to increase symptoms of depression in individuals with severe neck pain. In a systematic review, it was stated that sleep problems are a risk factor for neck pain [5].

In the literature, studies on pain and sleep quality in individuals with neck pain have been conducted. However, studies that include all these factors and determine the relationship between each other are not included. In this context, the aim of our study was to determine the relationship between pain severity and sleep quality in individuals with neck pain.

Material and Methods

Study participants

The study included 89 volunteers aged 18-65 years who applied to Istanbul Aydın University Health Practices and Research Center with the complaint of neck pain between March and May 2021, with a score of 4 and above according to the Neck Disability Index (BDI).

Purpose of the research

The aim of our study was to determine the relationship between pain intensity and sleep quality in individuals with neck pain.

Research Hypotheses

H1: There is a significant relationship between pain severity, disability, thoracic kyphosis, sleep quality and nomophobia in individuals with neck pain.

H2: There is no significant relationship between pain severity, disability, thoracic kyphosis, sleep quality and nomophobia in individuals with neck pain.

Limitations of the research

- Being in the range of 18-65
- Incomplete filling of the questionnaires used in the study
- Individuals with a test score above 4 according to the Neck Disability Index,
- Using drugs that will affect sleep quality
- Applying to Istanbul Aydın University Health Practices and Research Center due to neck pain between March-May 2021

The pain intensity of the individuals participating in the study was evaluated with the Visual Analog Scale (VAS), their sleep quality was evaluated with the Pittsburg Sleep Quality Index (PUKI), and their personal information was evaluated with the Personal Information Form.

Visual analog scale (VAS)

In order to evaluate the severity of pain, one of the individuals who stated that there was no pain at the left end, that is, at the starting point; At the end of the line, they were asked to mark the point showing their pain intensity on the 10 cm long horizontal line where the expressions declaring the most severe pain are included. The marked point was noted in cm [10].

Pittsburg sleep quality index (PUKI)

It was developed by Buysse et al. in 1989 [11]. Its Turkish validity and reliability were demonstrated by Ağargün et al. in 1996 [12]. The index consists of 24 questions and evaluates the sleep quality of the last month. Nineteen of the 24 questions in

the survey were answered by the person; the other 5 questions were answered by the spouse or roommate of the person. These 5 questions were not included in the scoring. The 18 questions of the scale are grouped into 7 components. The components include information about sleep quality, time spent in sleep, medication used for sleep, sleep latency, sleep disorders. The sum of the scores in these components gives the PUKI score, and the total score takes a value between 0 and 21. In our study, the sleep quality of individuals was interpreted as good (0-5 points) or poor (5 and above).

Ethical Consideration

The study protocol was approved by the Diyarbakır Dağkapı State Hospital Ethics Committee (Approval No.: 28 Date: 11 February, 2022).

Results

Eighty-nine volunteers aged 18-65 years who applied to Istanbul Aydın University Health Application and Research Center due to neck pain and had a test score of 4 and above according to BDI were included in the study. Females (n=56) accounted for 62.92 percent of the individuals participating in the research and 37.08 percent were males (n=33). The mean age of the participants whose age range was between 18 and 53 years, was calculated as 28.48 ±8.57 years and the mean Body Mass Index (BMI) was calculated as 23.56±3.84 kg/m²; 62.92 percent of the individuals included in the study were working. While

Table 1. Gender distribution and average age of individuals

		N	% (Average±SS)
Gender	Women	56	62,92
	Men	33	37,08
Age (year)		82	28,48±8,55
BDI		81	23,56±3,84
Working State	Yes	56	62,92
	No	33	37,08
Cigarette	Yes	29	32,58
	No	60	67,42
Alcohol	Yes	34	59,65
	No	23	40,35

Table 2. Frequency distribution by the disease histories of the participants

		N	%
Surgical Operation History	Yes	40	45,45
	No	48	54,55
Chronic Discomfort	Yes	24	27,91
	No	62	72,09
Any Regular Medication Use	Yes	15	17,24
	No	72	82,76
Regular Exercise Status	Yes	34	39,08
	No	53	60,92
Daily Sitting Time	0-3	22	24,72
	4-6	36	40,45
	7-9	19	21,35
	10-12	12	13,48

74.15 percent of individuals were single, 25.85 percent were married; 32.58 percent of the individuals included in the study used cigarettes and 40.35 percent use alcohol (Table 1).

The frequency distribution of the disease histories of the individuals participating in the study is presented in Table 2. Accordingly, 40 participants (45.45%) had a previous surgical operation. The number of individuals with chronic diseases was 24 (27.91 percent). It was observed that 15 individuals (17.24 percent) used a regular drug. Thirty-four (39.08%) of the individuals included in the study were doing regular exercise. In addition, when the daily sitting time of individuals was examined, 40.45 percent of them were 4-6 hours (36 individuals), 24.72 percent were 0-3 hours (22 individuals), 21.35 percent were 7-9 hours (19 individuals) and 13.48 percent spent 10-12 hours (12 individuals) sitting.

The descriptive statistical distribution of the BDI and VAS measurements of the individuals participating in the study was presented. The mean VAS was calculated as 5.16±2.35, the mean BDI as 11.19±5.45, and the mean PUKI as 10.93±3.09.

There was no statistically significant difference in BDI scores according to gender (p>0.05). Age and BMI, which are demographic variables, were statistically significantly different according to the gender of the participants (p<0.05). No statistically significant difference was observed in the comparison of PUKI and VAS measurement values according to gender (p>0.05).

There was moderate positive (r=0.437) correlation between BDI and PUKI; A statistically significant positive correlation (r=0.577) was found between VAS (p<0.05). However, there was no statistically significant relationship between BDI and age, and BDI and BMI scores (p>0.05).

There was moderate positive correlation (r=0.401) between PUKI and VAS; A statistically significant correlation was found between BMI and weak positive (r=0.241) (p<0.05).

Discussion

In our study the relationship between neck pain, functional disability, pain severity, sleep quality, nomophobia status, and the presence of hyperkyphosis was examined in this study on neck pain, which was determined to reduce daily life and occupational quality and create a financial burden on individuals. Although debate continues about the age range where neck pain is most common, it has been suggested that the most common age is 45-64, and the age at which it peaks is 50. It has been stated that it is more common in women aged 40 and over. With the exclusion of pathological causes that may cause neck pain, an increase in neck pain as a result of degenerative changes in the neck region with advancing age has been reported [13]. Except for neck pain, it has been determined that women experience more pain than men and go to physiotherapy centers more frequently [14]. However, in our study, it was determined that the individuals experiencing neck pain were males, and the average age of males was higher than that of females. When the average age of our study is examined, it appears to be 28.42 years, which is a younger population. It was commented that different results were obtained with the literature due to the fact that the population was younger, the male population was larger, and the age range of the male

population was longer. In a review study, it was stated that there were inconsistent results between nonspecific neck pain and female gender in a younger population aged between 18-29 years, and that more studies should be done to determine the risk factors associated with neck pain [15].

Neck pain is the most common among mobile device users and neck flexion posture is said to be associated with this problem [16]. It is stated that nomophobic students have text-neck and SMS thumb syndromes and there is a relationship between nomophobia and neck disability [17].

The bidirectional relationship between pain and sleep problems leads to severe and longer duration of symptoms [18]. It has been stated that decreased sleep quality has a high prevalence in individuals with neck pain, and sleep problems are a risk factor for neck pain [5]. Carmen et al., in their study examining sleep quality in individuals with mechanical neck pain and whiplash-related neck pain, reported that there was a relationship between an increase in the severity of sleep quality disorders and an increase in pain severity, and the cycle between pain and sleep disorders should be considered in the treatment of individuals with neck pain [19]. Scarabottolo et al [20] evaluated the relationship between low back pain and neck pain and sleep quality in a study on adolescents; 1011 adolescents participated in the study and it was determined that low back pain and neck pain were associated with poor sleep quality. Consistent with the literature, in our study, a moderate positive correlation was determined between the increase in pain intensity and the deterioration in sleep quality. Muñoz-Muñoz et al. [21] evaluated the relationship between myofascial trigger points, pain, neck disability and sleep quality in individuals with mechanical neck pain, and evaluated sleep quality with PUKI and neck disability levels with BDI, similar to our study. At the end of the study, it was shown that the deterioration in sleep quality was associated with neck disability. In our study, it was observed that there was a moderate positive relationship between PUKI and BDI, and it was determined that impaired sleep quality could lead to neck disability.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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